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ABSTRACT

The first of the two reports contained in this document is a preliminary analysis, by Dr. James Cobbe, of the data collected on an extension of a study of the upgrading program for primary school (Sekolah Dasar, or SD) to Diploma Dua (D2) using the Swadana (fully self-financed) delivery system. The extension of the study covers the six current delivery systems in four provinces, focussing on the economic and financial concerns of SD teachers only. Average annual total out-of-pocket private costs for participants vary by program, age group, and province. For all of the programs, costs are being borne by the participants, with little help from outside sources. The rates of return for participants vary considerably with delivery system and with age and rank. As presently structured, the D2 program is in general not an attractive economic investment opportunity for SD teachers. The second report, by Dr. James Cobbe and Dr. Ibrahim Musa, summarizes in English those parts of the study of the Guru SD-D2 upgrading program that deal with the private costs and benefits to teachers of the Swadana program. A questionnaire covered three areas of expenditures of the program: direct, indirect, and additional costs. Data show that the Swadana program is a poor investment for teachers. Thus, some subsidy to all teachers in D2 programs would be necessary to complete upgrading of teachers in a reasonable amount of time. (JPT)

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EDUCATIONAL POLICY AND PLANNING

A GOVERNMENT OF INDONESIA - USAID PROJECT

ED356544

SD-D2 *Swadana* Upgrading Program [D2-PGSD *Swadana*]

Summary Preliminary Report, D2-PGSD Program Economic Aspects

Report on Study of Economic Aspects

June 1992

U.S. DEPARTMENT OF EDUCATION
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PREFACE

The Educational Policy and Planning (EPP) Project is a seven year project conducted jointly by the Indonesia Ministry of Education (MOEC) and the United States Agency for International Development (USAID). The overall project objective is to improve the quality of education in Indonesia by assisting the MOEC, through the Office of Educational and Cultural Research and Development (Balitbang Dikbud), to formulate better policies and long-term plans. The project aims to improve policy formulation and long-term planning by improving the timeliness, relevance and accuracy of educational data collection, the subsequent analyses of such data, and their ultimate use for policy and decisionmaking.

There are three major components of the EPP Project: (1) development of an integrated management informations system (MIS) within the MOEC, (2) enhancement of MOEC policy research and analysis capacity, and (3) support for MOEC institutional development at the national and provincial level through training and technical assistance. EPP technical advisory staff work closely with counterpart Indonesian staff as part of a collaborative process of developing institutional capacity.

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Republic of Indonesia

The EPP Project in collaboration with the USAID Improving the Efficiency of Educational Systems (IEES) Project, publishes EPP documents in order to disseminate this knowledge and extend its usefulness. EPP has carried out a series of policy studies designed to provide answers to key questions facing Indonesian educators. These include:

The Quality of Basic Education
The Quality and Efficiency of Vocational/Technical Education
The Strengthening of Local Education Capacity
Developing Indicators of Educational Efficiency
Teacher Education Issues
Curriculum Reform and Textbook Production
Education, Economic, and Social Development

This series has been planned under the direction of Moegiadi, Balitbang Dikbud, and Boediono, Center for Informatics, Balitbang Dikbud and Simon Ju, EPP Chief of Party.

Editors for the series are Abas Gozali, Reta Hendrati Dewi, Center for Informatics, and Jerry Messec, IEES, Florida State University.

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Summary Preliminary Report, D2-PGSD Program Economic Aspects

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Report on Study of Economic Aspects

James Cobbe
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Jakarta, Indonesia

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Summary Preliminary Report, D2-PGSD Program Economic Aspects

James Cobbe

Summary Preliminary Report, D2-PGSD Program Economic Aspects

I. Introduction

Previously, a study was undertaken of the upgrading program for primary school (*Sekolah Dasar, SD*) to *Diploma Dua* (D2) via the *Swadana* (fully self-financed) delivery system. This report is a preliminary analysis of the data collected under the extension of that study to cover all six current delivery systems in four provinces, focussing on the economic and financial aspects from the point of view of the participant SD teachers only. A fuller report will be prepared by the study team, led by Ibrahim Musa of Universitas Terbuka, and will be available from Universita Terbuka and the EPP office.

II. Background

There are currently six delivery systems by which an SD teacher who has only a normal school education can study for upgrading to D2 level (equivalent to two years full-time post senior secondary school) part-time (over three years). All are based on a program prepared by Universitas Terbuka (UT, the Open University), and most still involve UT to some extent. The six schemes are as follows (the numbering is that used throughout this report):

1. *Tatap Muka* (face-to-face). A program run by IKIPs (Teacher Training Institutes) and some FKIPs (Faculties of Education of Universities) on an afternoon/evening basis, generally about two days a week. These programs are self-financing.

2. *Swadana* (self-financing). A program run by UT, initially (1990-91) in Bandung only, but now expanded to the whole country on the basis of demand. This program uses the materials originally developed for the regular (government-financed, *Beasiswa*) program, and involves tutorials that meet on a weekly basis, officially, over two 14 week semesters a year.

3. *Beasiswa* (literally 'scholarship,' the regular, or 'project' delivery system). The original program, developed by UT and financed by government. Sufficient finance has been provided for only around 20,000 participants a year, although there are about 1.2 million SD teachers without D2. The regulations state the target age for this delivery scheme as 35 to 45 years old, and residence as semi-remote areas.

4. PPPG. This is run by a correspondence institute for teachers, which was given sufficient funds to enroll 2,000 participants for an initial cohort to be taken through 3 years before a new cohort in enrolled. The slots were allocated to provinces and Kanwils selected the location of the PPPG D2 activities and the participants. The delivery is based closely on the UT *Beasiswa* model, using UT materials.

5. SRP. This is a special program involving radio, cassettes, and other distance-teaching materials designed for teachers in remote areas, and government-financed. This study found some participants in this program who were in suburban areas of towns rather than in remote areas.

6. *Penjaskes*. This is a special program for SD specialist sports and physical activity teachers, which is operated and financed through the Directorate-General Primary Education of

the Ministry and has both special content and special provisions, including residential sessions of a week or two at locations with sports facilities.

Data on which this report are based were collected by questionnaire from participants in the D2 program at locations in four provinces, Jawa Barat (West Java, JB), Sumatera Selatan (South Sumatra, SS), Kalimantan Tengah (Central Borneo, KT), and Riau (R). Participants wherever possible were requested to fill out the questionnaires during a regular tutorial session, in both urban and rural locations. Where the delivery system did not involve tutorials, participants were asked to come to a central location for a meeting at which the questionnaires were completed. In total, 524 usable questionnaires were obtained and this report is based on the data in those questionnaires. It has not as yet been possible to combine the data collected in this extension with the data from the 322 usable questionnaires obtained in the earlier *Swadana* study because of slight modifications to the questionnaire and data-entry protocols that make the two data sets not entirely compatible in their current forms. Thus *Swadana* is missing from Jawa Barat, although in fact the *Swadana* study collected a substantial quantity of data in Jawa Barat.

Table 1 provides some basic information on the participants who provided data for this study, according to the delivery system in which they were enrolled. The most data are available on the three largest delivery systems, *Tatap Muka*, *Swadana*, and *Beasiswa*, with sample sizes in excess of 100 in each case. The sample sizes for the three smaller programs are smaller, in the SRP and *Penjaskes* cases quite small. Accordingly, where the report gets into most detail and the more disaggregated issues (such as variations in cost structure), the focus will be on the three large programs and the three smaller ones will be neglected.

Compared to the other delivery systems, *Beasiswa* particpants are older, more senior, more likely to be men, more likely to be married, and more likely to be *Kepala Sekolah* (Principals). The SRP participants are the closest to the *Beasiswa* ones on most characteristics, but more of them are women. In the self-financing delivery systems, *Tatap Muka* and *Swadana*, 80% or more of participants are women, and they are younger, less experienced, of lower rank, and much less likely to be a *Kepala Sekolah* than in the *Beasiswa* delivery scheme. However, in all delivery schemes the range of age, rank, and experience is quite wide.

III. Private Costs

Tables 2 and 3 summarise average annual total explicit (out-of-pocket) private costs as they vary on several dimensions, by program, age-group, and province. Taking all ages and provinces together, for participants the cheapest program is the heavily-subsidised *Penjaskes* one, which has average costs per year of only Rp. 112,337, compared to the Rp. 573,363 for *Tatap Muka*. The next most expensive is *Swadana*, then PPPG and SRP in a virtual tie, and the next to cheapest is the *Beasiswa* delivery scheme, at Rp. 169,687. However, it should be noted that even the supposedly fully-subsidised *Beasiswa* scheme has annual private explicit costs of about a month's salary for a teacher of typical rank in that scheme.

There is a surprising amount of variation in expenditure on the D2 program according to the age of the participant, with participants in some schemes at some ages spending as much as three times as much as other participants of different ages in the same schemes. However, some of the relevant data cells are quite small, and perhaps not too much reliance should be put on these data. Most important is the fact that to the teacher participants, the Tatap Muka is on average more than three times, and the *Swadana* on average more than two times, as expensive as the *Beasiswa* scheme.

However, there is also variation within programs across provinces, as shown in table 3. In the three large programs, in each case the most expensive province is 30 to 50% more expensive than the cheapest province. The sources of this variation are traced back a little in a series of appended spreadsheet tables, which show average reported expenditure in each of various categories, both in terms of the average for those actually reporting expenditure in the category ("kositem.xls") and in terms of average expenditure in each category averaged over all participants, including those reporting zero expenditure in the category ("cost structure by program and province").

IV. Financing

Participants were requested to report the amounts obtained to finance participation in the program according to six specified sources and an 'other' category. Attempts were made to get participants to identify sources adding up to the total expenditure they had reported; this was, unsurprisingly, not wholly successful. In the sample as a whole the total reported financing averaged Rp 287,314, whereas total average expenditure amounted to Rp. 321,781. However, in some delivery systems, in some provinces, reported financing exceeds reported expenditure!

The attached spreadsheet printout, "Finance sources by program and province," summarises the reported sources of finance. 86% of participants reported that they were paying part of the cost themselves, and for them on average their contribution was 74% of the average total financing reported. The next most common source was family, largely husbands and parents for younger teachers, with overall 29% reporting this as a source, amounting to on average 55% of the total reported financing. Next came Koperasi, school cooperatives, which provided financing (amounting to 61% of the amount financed on average) to 20% of participants. Bank loans were used by 7% of participants, for 77% of the total average amount required. Unidentified 'other' sources were used by 5% of participants, and the three other identified sources were used by only 1% of participants each. Among the three large delivery schemes, there is substantial variation across provinces and delivery schemes. Yayasan (foundations), for example, are a source of finance only for the *Swadana* delivery system in Riau, and local government only a source for *Beasiswa* in Riau. The school itself was a source of finance for only 4 participants, all in *Tatap Muka*, 3 in Jawa Barat and 1 in Sumatera Selatan, and even then only provided 14% of what was needed. Bank loans were used much more in Sulawesi Selatan than in other provinces, and cooperatives much less. Overall, it is clear that almost all the cost of the D2 program is being borne by the participants themselves and their families, with comparatively little help even in the form of loans from other sources.

V. Private Rate of Return

The material incentive for teachers to participate in the D2 program is that under the current regulations, participation in and completion of the program earns for the teacher 'functional credits' (*kredit bagi jabatan guru*, widely known as 'kum'), on which promotion decisions are now based. Obtaining the actual D2 diploma earns 25 credit points; participation in the program can earn 2 points a year if proper application is made. Thus participation in the program can accelerate promotion, and thus raise salary (and, for older teachers, pension). Accordingly, a major objective of this study was to analyse the program viewed as a private investment by the teacher to see if it was economically attractive.

Ideally, one would wish to make this analysis on the basis of the full private costs to the teacher, including the opportunity costs of foregone alternative uses of time and effort (the teachers' time commitments are large), and the full private returns, including returns other than enhanced salary and allowances. However, it has turned out to be extraordinarily difficult to make a meaningful estimate of

the monetary value of the teachers' opportunity costs for the time and effort they devote to the program. Teachers seem very reluctant to attempt to account for how they would use their time if they were not in the program; being SD teachers, many of them in rural areas, most have no opportunity to earn additional monetary income from giving private instruction ('*les*'); and very few indeed were prepared to actually provide data on their earnings from activities other than their regular teaching job. Furthermore, there is the added complication that those teachers who did provide information very frequently did not reduce the time they devoted to outside earnings activities when they enrolled in the program, because they needed to pay for the program. In addition, although the teachers did tend to agree that acquiring the D2 would allow a higher charge for private tuition for those who had the opportunity, the number who were willing to hazard a guess as to how much higher was extremely small, and there is no satisfactory basis for estimating the value of benefits from acquisition of D2 other than the enhanced salary and allowances.

Accordingly, what has been estimated is the private real rate of return to completion of the D2-SPG program on the basis solely of explicit, out-of-pocket, private costs and estimated enhanced salary. Because it seems that the acquisition of D2 will not enhance outside earnings possibilities for the majority of teachers, this should be interpreted as an absolute upper bound on the real private rate of return to the program, because the time commitments of the program are large and the opportunity cost of this time commitment is omitted from the cost side of the calculation.

For the benefit side, it is necessary to make some assumptions about the workings of the functional credit system, for which there is as yet little experience for SD teachers. In contrast to the earlier *Swadana* report, it was possible to obtain a full copy of the relevant regulations, and to estimate initial credit point allocations ('inpassing') on the basis of rank, experience, and these regulations. The key assumptions are that in Golongan II, teachers will earn 4 points a year (enough to give promotion after five years), and in Golongan III, 10 points a year (enough to give promotion after five years up to III/c)[1], from their activities other than participation in the D2 program, and that these rates of accumulation of credit points from activities other than the D2 program will remain unchanged by acquisition of the D2 diploma. It is important to acknowledge that because salary depends on rank, and rank depends on total credit points, different assumptions about the rate of accumulation of credit points would produce different results. It has not been possible to investigate the sensitivity of the results to variations in this key set of assumptions, in part because, given the lack of experience with the system, officials seem very unwilling to express opinions about reasonable levels of point accumulation per year to assume.

Modal rank and years of experience for participants in the D2 program of ages 25, 30, 35, 40, and 45 were extracted from the data. At ages 25 and 40 the distribution was bimodal, so two ranks were used. On the basis of this initial rank, inpassed initial accumulation of credit points, and the assumptions outlined above about rate of accumulation of credit points in the future, future expected salary (and pension, where relevant) were estimated (on the basis of the 1992 salary scale and allowances; costs were also all entered at 1992 levels, i.e. in 1992 prices, so that on the assumption that on average over the long term government will revise salary scales in line with inflation so that their real value is maintained, the analysis is in real terms and the rate of return estimated is a real rate of

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1 Five years was chosen because the regulations suggest that normal promotion should come after four years, and according to the regulations if the teacher has not accumulated sufficient points for promotion after six years, the teacher can be transferred to administration, i.e. made a clerk, with consequent loss of functional allowance for being a teacher.

of return) for both a participant in the D2 program and a non-participant, over a twenty-five year time horizon. The difference is the monetary benefit derived from participating in the program. Using age- and program-specific average total private explicit costs of participation (shown in table 2), the internal rate of return of participation in the D2 program was then estimated.

The internal rate of return is the rate of interest that precisely makes the net present value of the stream of costs and benefits over the 25 year horizon zero, i.e., it can be thought of as the rate of interest which would result in exactly breaking even if the costs were borrowed at that rate of interest and the benefits were used to repay the loan. Reversing the idea, it is the rate of interest earned (as salary increase) by the resources the teacher has invested in the program (through the cost of participation). Table 4 summarises the estimates by delivery system ['program'] and age and initial rank assumption.

It should be remembered that these are estimates of real rates of return, i.e., they are equivalent to money (or 'nominal') rates of return minus the rate of inflation. To make comparisons to money rates, such as the rate of interest on a bank deposit or a bank loan, an estimate of the rate of inflation over the relevant period should be added to the figure shown in the table. In Indonesia, 9% or so might be a reasonable estimate of the long run rate of inflation.

Two immediate conclusions are that the expected estimated rates of return vary considerably with delivery system (because costs differ) and with age and rank (because both expenditures differ by age, and more importantly because the effects of completion of the program on rank, and thus salary, vary with initial rank). At most ages and ranks, the *Beasiswa* delivery system, as might be expected, is the most economically attractive, although at particular ages it is beaten by SRP (radio project for remote areas) and *Penjaskes* (special program for specialist sports teachers). It is also very striking that where estimates were made for two ranks at a given age, the program is much more economically attractive for teachers with the lower rank than for those with the higher rank – this is basically because it is very much more difficult (50 points instead of 20) to be promoted in Golongan III than in Golongan II, and to go from III/c to III/d (100 points rather than 50) than to get earlier promotions within Golongan III, and thus the effect of the extra D2 points is much stronger earlier for the teachers of more junior rank than for those of more senior rank of the same age.

How attractive are the various delivery systems, and the D2-SPG program as a whole, viewed as a private investment from the point of view of the teacher participant? To answer this question, one must compare the estimated real rate of return to the expected rates of return on alternative uses of the teachers' resources. At present in Indonesia, an individual can obtain better than 10% per annum real return on a deposit in a bank, assuming inflation will be about 9%. As it happens, a 10% real rate of return is the test discount rate used by the World Bank to appraise project proposals, i.e., the World Bank normally rejects investment proposals that are not estimated to earn a 10% real rate of return. If we take 10% as the cut-off point, the D2 program does not look like a good investment for most teachers. The self-financed delivery systems, *Tatap Muka* and *Swadana*, look like unattractive investments at all ages and ranks. *Tatap Muka* is particularly bad, with three estimates of real rates of return being negative (i.e., teachers will get back less than they put in, the enhanced salary from obtaining the D2 will never pay the cost of obtaining it), and the highest rate being 2.3% per annum. *Swadana* is not much better. It produces a negative real rate of return for higher-ranked 40 year olds, and only at two other initial situations (that of a 25 year old who is still a II/a, a situation that according to the regulations should not exist, but according to our respondents does; and that of a 40 year old still in Golongan II, again in theory something highly unlikely but according to the data quite common) does the estimated real rate of return exceed 5% per annum.

The other four delivery systems, being heavily subsidised, do look considerably better. However, there are still fewer initial situations at which the expected estimated rate of return is higher than 10% per annum than there are at which it is lower, suggesting that even in these officially fully-subsidised delivery systems there are many participants who, from a purely private economic point of view, would be better off putting their money in the bank than spending it on this program. The program is particularly unattractive for 25 year olds who have reached II/b (which they all should have with four years of experience).

VI. Conclusion

It must be remembered that these rates of return have all been based on the private, explicit (out-of-pocket) costs alone. No allowance has been made for the opportunity cost of the time and effort devoted by the SD teachers to participation in the program. Reported time spent on the program ranges from about two and a half hours a week to over 40 hours a week, with means in the 10.5 to 12.5 hours a week range. Just to illustrate the effects of allowing for the opportunity cost of time foregone, if we were to estimate the value of the teachers' time at only Rp. 300 an hour, adding in the cost of 11 hours a week for 28 weeks a year would lower the expected real rate of return for the *Beasiswa* participants at age 40 and rank II/d/18 (who have the highest rate of return for their delivery system) to 9.12% per annum, below the 10% cutoff we have suggested as reasonable. Even the 35 year old Penjaskes participants, who currently have remarkably low costs and therefore a very high estimated rate of return, would have their rate of return lowered to 12.67% per annum by costing that amount of time commitment at only Rp. 300 an hour.

The overall conclusion must therefore be that as presently structured, the D2 program is in general not an attractive investment opportunity for SD teachers, when viewed as an investment from a purely monetary private point of view. Accordingly, it is probably unwise to expect enrollment in the D2 programs to continue to grow unless either moral suasion is applied to the teachers to ensure they do enroll (there is evidence of the use of moral suasion to get teachers to enroll now), or there are substantial nonpecuniary rewards (such as prestige, professional skill enhancement, etc.) to the D2 program, which of course have been neglected by this analysis.

Table 1
Profile of Participants in the Sample by Program

Program	1 PTM	2 Swadana	3 Beasiswa	4 PPPG	5 SRP	6 Penjaskes
Age (years):						
Mean	32.6	34.7	39.8	31.1	39.8	31.2
Range	23-45	23-51	31-55	24-42	30-46	24-42
% married	79	88	99	82	97	100
% female	81	80	54	74	79	58
# children	2.56	2.83	3.45	1.88	3.88	2.72
Years of experience:						
Mean	10.9	13.4	17.9	9.1	16.4	9.9
Range	2-24	1-30	9-32	2-21	6-25	5-16
% Kepala Sekolah	2.8	10.6	37.6	10.9	10.7	0
Rank:						
Mode, %	IIc 50%	IId 34%	IId 45%	IIc 39%	IId 45%	IIc 42%
% lower	17	42	10	35	10	32
% higher	32	24	45	26	45	26
# cases	110	141	171	54	29	19
% by province						
Jawa Barat	29.1	0	36.8	53.7	0	0
Sumatra Selatan	24.5	41.1	25.7	46.3	0	0
Kalimantan Tengah	20.9	27.7	12.3	0	0	100
Riau	25.5	31.2	25.1	0	100	0

Table 2
Total Annual Explicit Private Costs by Program and Age Group, 1992 Rupiah

Program	1 PTM	2 Swadana	3 Beasiswa	4 PPPG	5 SRP	6 Penjaskes
Ages						Rupiah
<28	654 425	424 291	---	270 008	---	285 667
28-32	562 650	354 602	219 760	245 105	82 700	91 600
33-37	538 093	419 435	172 716	250 813	290 117	87 100
38-42	609 246	358 865	176 123	181 938	246 920	---
>42	585 550	353 338	144 973	---	209 900	---
All ages	573 363	382 534	169 687	242 439	242 379	112 337
As index number, all-age Beasiswa average as 100:						
<28	386	250	---	159	---	168
28-32	332	209	130	144	49	54
33-37	317	247	102	148	171	51
38-42	359	211	104	107	146	---
>42	345	208	85	---	124	---
All ages	338	225	100	143	143	66

Table 3
Total Annual Explicit Private Costs by Program and Province, 1992 Rupiah

Program	1 PTM	2 Swadana	3 Beasiswa	4 PPPG	5 SRP	6 Penjaskes
Province						
Jawa Barat	609 875	---	190 967	208 569	---	---
Sumatra Selatan	627 533	335 624	141 645	285 056	---	---
Kalimantan Tengah	480 147	467 459	227 395	---	---	112 337
Riau	566 446	382 150	169 233	243 980	245 469	---

KOSITEM.XLS

ITEM COSTS BY PROGRAM AND PROVINCE (EXCLUDING THOSE WHO PAID ZERO)

	TATAP MUKA								SWADANA		BEASISWA									
	JB		SS		KT		R		JB	SS	KT		R		JB		SS		KT		R	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Direct Costs		32		27		23		28				58		39		44		63		44		21		43
Registration fee	15000	32	12857	14	8095	21	1275	4	NA	NA	7491	58	7500	39	7500	44	10000	20	0	0	9231	13	0	0
Tuition	180000	32	240000	27	240000	23	216000	28	NA	NA	83405	58	105769	39	75000	44	0	0	0	0	0	0	0	0
Books/Modules	50000	1	75952	21	0	0	0	0	NA	NA	80000	58	80000	31	80000	44	0	0	0	0	7750	4	0	0
Tutorials	0	0	131444	9	129400	5	0	0	NA	NA	70000	58	70000	31	68568	44	0	0	0	0	19900	10	0	0
Examinations	0	0	0	0	0	0	24000	3	NA	NA	3000	1	3000	1	6750	4	0	0	0	0	21821	14	0	0
Repeat Exam	0	0	0	0	0	0	0	0	NA	NA	0	0	0	0	0	0	0	0	15789	19	10875	16	7636	11
Indirect Costs																								
Registration	18250	32	48470	17	16610	20	7768	22	NA	NA	7734	50	28350	38	31280	20	9588	51	7818	25	37705	19	7723	43
Tutorial	260856	32	220444	16	160809	21	203864	28	NA	NA	54938	58	148367	30	117856	25	66441	53	76688	43	40125	16	90395	43
Books/Modules	27664	22	118214	21	11600	16	75796	25	NA	NA	15580	30	23706	16	33600	5	16545	22	16200	10	14600	10	7427	15
Examinations	13414	29	0	0	0	0	12032	22	NA	NA	7912	39	13305	34	14093	44	6088	34	15038	26	41111	18	7564	28
Repeat Exam	0	0	0	0	0	0	1300	6	NA	NA	0	0	0	0	4000	1	68000	0	6800	19	33250	16	5073	11
Other Admin	20136	22	17500	4	12833	6	10222	9	NA	NA	18467	15	34607	28	25638	13	21750	12	17727	11	15671	17	12276	29
Segrouped as																								
Transportation	232271	32	157136	25	155095	23	129900	28	NA	NA	41315	58	79025	39	52822	44	39368	57	49822	44	64095	21	65583	43
Accomodation	39400	2	0	0	0	0	0	0	NA	NA	0	0	240000	3	8681	11	0	0	0	0	29722	18	13333	3
Photocoping	40603	32	88812	24	13600	22	88314	28	NA	NA	19282	57	44974	38	40700	20	25680	50	20930	43	20276	21	10500	28
Meals	62657	30	65679	14	51000	2	86104	27	NA	NA	26859	44	52000	35	30145	44	37753	43	31767	43	45474	19	43005	42
Other Costs																								
Exam Preparation	0	0	0	0	0	0	0	0	NA	NA	0	0	8480	5	4714	7	8656	61	7100	12	15000	2	4000	4
Jacket	4972	32	0	0	0	0	0	0	NA	NA	0	0	0	0	6500	28	5167	63	0	0	0	0	6500	19
Publications	12600	5	24000	1	0	0	0	0	NA	NA	4333	6	36667	3	2000	1	0	0	10000	1	23000	3	0	0
Group Dues	12231	32	10667	9	2000	22	10667	24	NA	NA	3000	5	13655	29	8280	40	68491	81	17515	33	20800	15	8600	35
Writing materials	29000	32	18210	19	36800	15	14718	27	NA	NA	12957	47	27241	29	10585	39	20542	59	17562	32	14450	20	5754	39
Other	33133	30	15000	4	20286	7	24892	26	NA	NA	10250	16	22318	22	17444	27	14064	31	12889	18	14400	10	10667	18

Cost Structure by Program and Province, D2-SPG **000 rupiah**

Program:	1 Tatap Muka				2 Swadana			
Province	JB1	SS1	KT1	R1	JB2	SS2	KT2	R2
Direct costs								
Registration	15.000	6.666	7.391	0.182		7.491	7.500	7.500
Tuition	180.000	240.000	240.000	216.000		83.405	105.679	75.000
Books/modules	1.562	59.074	0.000	0.000		80.000	63.590	80.000
Tutorials	0.000	43.815	28.130	0.000		70.000	55.651	68.568
Exams	0.000	0.000	0.000	2.571		0.052	0.077	0.614
Repeat exams	0.000	0.000	0.000	0.000		0.000	0.000	0.000
Total direct	196.562	349.556	275.522	218.574		240.948	232.577	231.682
Indirect costs								
Registration	18.250	30.519	14.443	6.104		6.667	27.623	14.218
Tutorials	260.856	130.633	146.826	203.864		54.938	114.128	66.964
Study materials	19.019	91.944	8.070	67.675		8.059	9.726	3.818
Exams	12.156	0.000	0.000	9.454		5.321	11.600	14.093
Repeat exams	0.000	0.000	0.000	0.279		0.000	0.000	0.090
Administration	13.844	2.593	3.348	3.286		4.776	24.846	7.575
[regrouped as:								
Transport	232.272	145.496	155.096	129.900		41.316	79.026	52.823
Accommodation	2.462	0.000	0.000	0.000		0.000	18.462	2.170
Photocopy	40.603	78.944	13.009	88.314		18.950	43.820	18.500
Meals	58.741	34.056	4.435	83.029		20.376	46.667	30.145
Total indirect	334.078	258.496	172.539	301.243		80.641	187.974	103.639
Other costs								
Practice exams	0.000	0.000	0.000	0.000		0.000	1.087	0.750
UT Jacket	4.972	0.000	0.000	0.000		0.000	0.000	4.136
Publications	1.969	0.889	0.000	0.000		0.448	2.821	0.045
Group dues	12.231	3.556	1.913	9.143		0.259	10.154	7.527
Writing materials	29.000	12.815	24.000	14.193		10.500	20.256	9.382
Other	31.063	2.222	6.174	23.114		2.828	12.590	10.705
Subtotal	79.234	19.481	32.087	46.450		14.034	46.908	32.545
Grand total	609.875	627.533	480.148	566.446		335.624	467.459	367.866

(continued)

Program	3	Beasiswa			
Province	J83	SS3	KT3	R3	Overall
Direct costs					
Registration	3.175	0.000	5.714	0.000	4.624
Tuition	0.000	0.000	0.000	0.000	74.791
Books/modules	0.000	0.000	1.476	0.000	25.927
Tutorials	0.000	0.000	9.476	0.000	23.534
Exams	0.000	0.000	14.548	0.000	1.077
Repeat exams	0.000	6.818	8.286	1.953	2.493
Total direct	3.175	6.818	39.500	1.953	132.448
Indirect costs					
Registration	7.762	4.327	34.114	7.723	12.658
Tutorials	55.895	74.945	30.571	90.395	91.844
Study materials	5.778	3.682	6.952	2.591	18.269
Exams	3.286	8.886	35.238	4.926	9.885
Repeat exams	0.000	2.936	25.333	1.298	1.631
Administration	4.143	4.432	12.686	8.279	8.156
[regrouped as:					
Transport	35.619	49.823	64.095	65.584	76.587
Accommodation	0.000	0.159	25.476	0.930	3.314
Photocopy	20.381	20.455	20.276	6.837	28.689
Meals	25.768	31.045	41.143	42.005	36.277
Total indirect	81.768	101.482	150.990	115.356	144.866
Other costs					
Practice exams	8.381	1.936	1.429	0.372	2.652
UT Jacket	5.167	0.000	0.000	2.872	1.699
Publications	0.000	0.227	0.000	1.605	0.937
Group dues	66.317	13.136	14.857	5.372	14.555
Writing materials	19.238	12.773	13.762	5.219	13.886
Other	6.921	5.273	6.857	4.465	10.739
Subtotal	106.024	33.345	36.905	19.905	44.467
Grand total	190.967	141.645	227.395	137.214	321.781

Cost Structure by Program and Province, D2-SPG
As % of Program/Province Total

Program	1	Tatap Muka			2	Swadana		
Province	JB1	SS1	KT1	R1	JB2	SS2	KT2	R2
Direct costs								
Registration	2.5%	1.1%	1.5%	0.0%		2.2%	1.6%	2.0%
Tuition	29.5%	38.2%	50.0%	38.1%		24.9%	22.6%	20.4%
Books/modules	0.3%	9.4%	0.0%	0.0%		23.8%	13.6%	21.7%
Tutorials	0.0%	7.0%	5.9%	0.0%		20.9%	11.9%	18.6%
Exams	0.0%	0.0%	0.0%	0.5%		0.0%	0.0%	0.2%
Repeat exams	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
Total direct	32.2%	55.7%	57.4%	38.6%		71.8%	49.8%	63.0%
	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
Indirect costs	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
Registration	3.0%	4.9%	3.0%	1.1%		2.0%	5.9%	3.9%
Tutorials	42.8%	20.8%	30.6%	36.0%		16.4%	24.4%	18.2%
Study materials	3.1%	14.7%	1.7%	11.9%		2.4%	2.1%	1.0%
Exams	2.0%	0.0%	0.0%	1.7%		1.6%	2.5%	3.8%
Repeat exams	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
Administration	2.3%	0.4%	0.7%	0.6%		1.4%	5.3%	2.1%
[regrouped as:	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
Transport	38.1%	23.2%	32.3%	22.9%		12.3%	16.9%	14.4%
Accommodation	0.4%	0.0%	0.0%	0.0%		0.0%	3.9%	0.6%
Photocopy	6.7%	12.6%	2.7%	15.6%		5.6%	9.4%	5.0%
Meals	9.6%	5.4%	0.9%	14.7%		6.1%	10.0%	8.2%
Total indirect	54.8%	41.2%	35.9%	53.2%		24.0%	40.2%	28.2%
	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
Other costs	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
Practice exams	0.0%	0.0%	0.0%	0.0%		0.0%	0.2%	0.2%
UT Jacket	0.8%	0.0%	0.0%	0.0%		0.0%	0.0%	1.1%
Publications	0.3%	0.1%	0.0%	0.0%		0.1%	0.6%	0.0%
Group dues	2.0%	0.6%	0.4%	1.6%		0.1%	2.2%	2.0%
Writing materials	4.8%	2.0%	5.0%	2.5%		3.1%	4.3%	2.6%
Other	5.1%	0.4%	1.3%	4.1%		0.8%	2.7%	2.9%
Subtotal	13.0%	3.1%	6.7%	8.2%		4.2%	10.0%	8.8%
		0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
Grand total	100.0%	100.0%	100.0%	100.0%		100.0%	100.0%	100.0%

(continued)

Program	3	Beasiswa			
Province	JB3	SS3	KT3	R3	Overall
Direct costs					
Registration	1.7%	0.0%	2.5%	0.0%	1.4%
Tuition	0.0%	0.0%	0.0%	0.0%	23.2%
Books/modules	0.0%	0.0%	0.6%	0.0%	8.1%
Tutorials	0.0%	0.0%	4.2%	0.0%	7.3%
Exams	0.0%	0.0%	6.4%	0.0%	0.3%
Repeat exams	0.0%	4.8%	3.6%	1.4%	0.8%
Total direct	1.7%	4.8%	17.4%	1.4%	41.2%
	0.0%	0.0%	0.0%	0.0%	0.0%
Indirect costs	0.0%	0.0%	0.0%	0.0%	0.0%
Registration	4.1%	3.1%	15.0%	5.6%	3.9%
Tutorials	29.3%	52.9%	13.4%	65.9%	28.5%
Study materials	3.0%	2.6%	3.1%	1.9%	5.7%
Exams	1.7%	6.3%	15.5%	3.6%	3.1%
Repeat exams	0.0%	2.1%	11.1%	0.9%	0.5%
Administration	2.2%	3.1%	5.6%	6.0%	2.5%
[regrouped as:	0.0%	0.0%	0.0%	0.0%	0.0%
Transport	18.7%	35.2%	28.2%	47.8%	23.8%
Accommodation	0.0%	0.1%	11.2%	0.7%	1.0%
Photocopy	10.7%	14.4%	8.9%	5.0%	8.9%
Meals	13.5%	21.9%	18.1%	30.6%	11.3%
Total indirect	42.8%	71.6%	66.4%	84.1%	45.0%
	0.0%	0.0%	0.0%	0.0%	0.0%
Other costs	0.0%	0.0%	0.0%	0.0%	0.0%
Practice exams	4.4%	1.4%	0.6%	0.3%	0.8%
UT Jacket	2.7%	0.0%	0.0%	2.1%	0.5%
Publications	0.0%	0.2%	0.0%	1.2%	0.3%
Group dues	34.7%	9.3%	6.5%	3.9%	4.5%
Writing materials	10.1%	9.0%	6.1%	3.8%	4.3%
Other	3.6%	3.7%	3.0%	3.3%	3.3%
Subtotal	55.5%	23.5%	16.2%	14.5%	13.8%
	0.0%	0.0%	0.0%	0.0%	0.0%
Grand total	100.0%	100.0%	100.0%	100.0%	100.0%

Cost Structure by Program and Province, D2-SPG
Cost Structure Indexed to Sample Average Each Item Equals 100
Cost Structure by Program and Province

Program	1	Tatap Muka			2	Swadana		
Province	JB1	SS1	KT1	R1	JB2	SS2	KT2	R2
Direct costs								
Registration	324	144	160	4	0	162	162	162
Tuition	241	321	321	289	0	112	141	100
Books/modules	6	228	0	0	0	309	245	309
Tutorials	0	186	120	0	0	297	236	291
Exams	0	0	0	239	0	5	7	57
Repeat exams	0	0	0	0	0	0	0	0
Total direct	148	264	208	165	0	182	176	175
Indirect costs								
Registration	144	241	114	48	0	53	218	112
Tutorials	284	142	160	222	0	60	124	73
Study materials	104	503	44	370	0	44	53	21
Exams	123	0	0	96	0	54	117	143
Repeat exams	0	0	0	17	0	0	0	6
Administration	170	32	41	40	0	59	305	93
[regrouped as:								
Transport	303	190	203	170	0	54	103	69
Accommodation	74	0	0	0	0	0	557	65
Photocopy	142	275	45	308	0	66	153	64
Meals	162	94	12	229	0	56	129	83
Total indirect	231	178	119	208	0	56	130	72
Other costs								
Practice exams	0	0	0	0	0	0	41	28
UT Jacket	293	0	0	0	0	0	0	243
Publications	210	95	0	0	0	48	301	5
Group dues	84	24	13	63	0	2	70	52
Writing materials	209	92	173	102	0	76	146	68
Other	289	21	57	215	0	26	117	100
Subtotal	178	44	72	104	0	32	105	73
Grand total	190	195	149	176	0	104	145	114

(continued)

Program	3	Beasiswa			
Province	JB3	SS3	KT3	R3	Overall
Direct costs					
Registration	69	0	124	0	100
Tuition	0	0	0	0	100
Books/modules	0	0	6	0	100
Tutorials	0	0	40	0	100
Exams	0	0	1351	0	100
Repeat exams	0	273	332	78	100
Total direct	2	5	30	1	100
Indirect costs					
Registration	61	34	270	61	100
Tutorials	61	82	33	98	100
Study materials	32	20	38	14	100
Exams	33	90	356	50	100
Repeat exams	0	180	1553	80	100
Administration	51	54	156	102	100
[regrouped as:					
Transport	47	65	84	86	100
Accommodation	0	5	769	28	100
Photocopy	71	71	71	24	100
Meals	71	86	113	116	100
Total indirect	56	70	104	80	100
Other costs					
Practice exams	316	73	54	14	100
UT Jacket	304	0	0	169	100
Publications	0	24	0	171	100
Group dues	456	90	102	37	100
Writing materials	139	92	99	38	100
Other	64	49	64	42	100
Subtotal	238	75	83	45	100
Grand total	59	44	71	43	100

Finance Sources by Program and Province
(1) Excluding Those Who Reported Zero for Given Source

000 rupiah 1992

	1. Tatap Muka								2. Swadana			
	JB1		SS1		KT1		R1		JB2		SS2	
Sources	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Self	439.1	32	366.374	27	177.195	20	304.279	24			215.808	49
Family	250.893	14	222.857	7	85	13	302.276	17			217.106	16
School	52	3	7.4	1	0	0	0	0			0	0
Yayasan	0	0	0	0	0	0	0	0			0	0
Local Govt	0	0	0	0	0	0	0	0			0	0
Bank	0	0	500	1	500	1	149	2			218.125	24
Co-op	164.045	11	194	10	246.471	17	199.447	15			208.409	11
Other	30.1	5	0	0	71.975	4	36.667	3			0	0
Total	614.834	32	514.796	27	418.556	23	565.754	28			371.997	58

	3. Beasiswa											
	KT2		R2		JB3		SS3		KT3		R3	
Sources	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Self	306.803	39	212.558	39	173.777	42	125.639	44	103.08	15	103.698	40
Family	194.038	13	127	11	102.156	24	58.167	3	12.857	7	100	2
School	0	0	0	0	0	0	0	0	0	0	0	0
Yayasan	0	0	233.715	7	0	0	0	0	0	0	0	0
Local Govt	0	0	0	0	0	0	0	0	0	0	100	2
Bank	112.5	1	235.417	6	100	1	0	0	0	0	0	0
Co-op	235.714	7	173	7	73.571	7	0	0	100	3	0	0
Other	7.5	1	182.575	2	0	0	0	0	0	0	87	2
Total	416.867	39	325.259	44	164.53	63	129.605	44	92.2	21	109.812	43

Overall [includes programs 4, 5, 6]
[Whole sample]

Sources	Mean	N	% of whole sample reporting source	% of cost from sour [for user
Self	211.577	453	86%	74%
Family	158.287	151	29%	55%
School	40.85	4	1%	14%
Yayasan	233.715	7	1%	81%
Local Govt	76.5	5	1%	27%
Bank	222.108	37	7%	77%
Co-op	176.433	106	20%	61%
Other	68.202	25	5%	24%
Total	287.314	524		

Table 4
Estimated Real Private Rates of Return by Program, D2-SPG, 1992

% per annum

Program	1 PTM	2 Swadana	3 Beasiswa	4 PPPG	5 SRP	6 Penjaskes
Age/Initial rank						
25 II/a/4	2.30	5.43	--	9.11	--	8.62
25 II/b/4	-2.31	0.40	--	3.53	--	3.12
30 II/c/9	-0.19	3.15	7.10	6.15	17.30	16.08
35 II/d/14	1.12	3.28	13.18	8.52	6.92	24.45
40 II/d/18	1.03	5.90	14.76	14.28	10.14	--
40 III/a/13	-5.89	-1.23	9.51	--	4.52	--
45 III/a/19	0.98	4.90	14.49	--	9.92	--

Note: As is obvious, under the functional credit system rate of return estimates are highly sensitive to assumptions made about initial rank and rate of accumulation of credits. The ranks shown are the modal ranks for the given ages in the sample (25 year olds and 40 year olds had bimodal distributions). Inpassing (initial accumulation of credits) is based on the regulations, and apart from participation in D2-SPG teachers are assumed to earn 4 points a year in Golongan II, 10 points a year in Golongan III. Other assumptions would produce different results. Salaries (and pensions) are assumed to be maintained by government at their 1992 real values, and all calculations are based on costs in 1992 prices and 1992 salary scales and pension regulations, and are thus in real terms. 25 year olds are assumed to be married with two children, all others to be married with three children. The cost estimates used are explicit costs only (ignoring opportunity costs), derived from the data collected, and are specific to the program and the age group [for a given age and initial rank (i.e. across a row), variation occurs because of the differences in private costs across programs; within a given program (i.e. down a column), variation occurs because of both differences in private costs across ages within a program, and the different effects of the functional credit system at different ages and initial ranks]. For variation in average costs, see table 2.

Report on Study of Economic Aspects

James Cobbe and Ibrahim Musa

The following report summarizes in English those parts of the study of the Guru SD-D2 upgrading program that deal with the private costs and benefits to teachers of the *Swadana* program. It has been prepared by Dr. James Cobbe, Florida State University, and Dr. Ibrahim Musa, Universitas Terbuka, with the assistance of the study team of staff from Universitas Terbuka and Balitbang Depdikbud, headed by Dr. Ibrahim Musa. The study was made possible by grants from the United States Agency for International Development, under the EPP (Educational Policy and Planning) Project, Jakarta, and the IEES (Improving the Efficiency of Educational Systems) Project, Learning Systems Institute, The Florida State University, Tallahassee. This report summarizes the main findings of a longer report in Bahasa Indonesia, also prepared by the study team, which is available from Universitas Terbuka or the EPP Project, Balitbang Depdikbud. Readers wanting more detail than is found in this summary should consult the Bahasa Indonesia version.

Report on Study of Economic Aspects

I. Introduction and Background

Until recently, teachers in primary schools (SD, *Sekolah Dasar*) in Indonesia were trained in normal schools, known as SPG (*Sekolah Pendidikan Guru*), secondary schools for the training of teachers. SPG schools have now been phased out, and a two year post senior secondary school (SMA) training course introduced for primary school teachers, leading to the *Diploma Dua*, D2. In future, the D2 will be the minimum educational qualification for SD teachers.

The total SD teaching force numbers approximately 1.2 million, and the age structure is tilted toward youth. Thus it would be at least 40 years before all SD teachers were qualified at D2 level if upgrading were to take place solely through normal retirement and attrition and hiring of newly-qualified teachers from pre-service training. Because the Government of Indonesia (GOI) is placing high priority on the improvement of the quality of SD, it has introduced various in-service training programs to upgrade SD teachers qualified with SPG graduation to the D2 level. In early 1992 there were believed to be five main delivery systems for this upgrading, viz.

1) The original, *beasiswa*, regular, or 'project' program, originally intended for teachers in semi-remote areas and involving, officially, no out-of-pocket costs to teachers. This is financed by government but run by UT (*Universitas Terbuka*, the Indonesian Open University). The funds made available have only been sufficient to enroll about 20,000 teachers a year. It is a three year, part-time program based on weekly 'tutorial' meetings and semester examinations.

2) The *swadana* program, fully self-financing. This is also administered through UT, and run very similarly to the regular program, but students are charged annual fees (initially Rp 275,000, now Rp 232,500 except in Bandung, the original experimental site) and various other charges to cover all costs.

3) The *SRP*, remote areas program, involving interactive radio.

4) The *tatap muka* or face-to-face program, offered by some IKIPs (post-SMA Teacher Training Institutes) as a part-time course with afternoon or evening lectures.

5) The *PPPG* program, which although run by a correspondence education organization is in fact another replication of the regular program using UT materials and the 'tutorial' structure, authorized and financed by the DG (Directorate-General) Primary and Secondary Education. This program has enrolled one cohort of about 2,000 teachers that it will take through the full three years, which PPPG claims will exhaust the funds made available to them.

The *Swadana* program was introduced because it was evident that with the financial allocation made for the regular program it would be impossible to make a significant impact on upgrading the bulk of the teachers in place within the period of the next development plan (Repelita VI). It was begun with a Year I intake of about 2,300 teachers in 1990-91 in Bandung. In 1991-92, the program was expanded to the whole of Indonesia on the basis of demand, although the Year I intake in Bandung fell to little over 200. Groups did begin studies in many other parts of the country, however, with nation-wide Year 1 enrollment in 1991-92 of about 21,000.

With financing from the USAID. EPP Project, a study was mounted by a research team of Balitbang Depdikbud and UT Puslitabmas staff, under Dr. Ibrahim Musa. The team was assigned to "develop the financial model for the D2-PSGD program." The study had various components and this report concentrates on that part of the study that relates to the costs and benefits of the Swadana program to the teachers enrolled, and an analysis of enrollment in it viewed as an investment on the part of the teacher.

II. Data Collection

Data were collected by questionnaire from teachers enrolled in the Swadana program in three provinces. The study design called for the questionnaires to be administered by the study team during 'tutorial' meetings at both rural and urban study centers in each province. Teachers were requested to provide, among other information, the location of the school at which they taught, and by this means the urban data were subdivided into three groups based on the socio-economic characteristics of the location at which the teacher taught. These groups are labelled *mampu*, or well-off; *sedang*, 'comfortable' or middling; and *kurang mampu*, poor. Data were collected in Jawa Barat, including Bandung and a rural Kecamatan outside Bandung; NTB, including Mataram and a rural site; and Sulawesi Selatan, including Ujung Pandang and a rural site. Most participants interviewed were in urban areas, and some difficulties were encountered with administering questionnaires during normal 'tutorial' meetings at some sites. However, the sample size for the four groupings is of reasonable size: in toto, there are 322 usable questionnaires, 122 from Jawa Barat, 95 from Sulawesi Selatan, and 105 from NTB; of these 99 are from rural areas, 45 from schools in mampu districts, 74 from sedang districts, and 104 from kurang mampu districts. For detailed demographic characteristics of the sample, see the report prepared by UT.

III. Descriptive Analysis of Data

Participants were invited on the questionnaire to report expenditures connected with the program in 30 categories, divided into three main groups. The first, direct costs, covered registration; SPP; learning modules and materials; tutorials; exams; and continuous assessment. The second, indirect costs, asked for expenditure on transportation, accommodation, photocopying, and consumables (food, drink, etc.), in connection with registration, tutorials, modules/learning materials, exams, continuous assessment, and other administration. The third, other or additional costs, covered practice exams; buying a UT jacket (allegedly compulsory); notebooks and books; study-group fees; writing materials; and other. In addition they were asked to identify how they financed the cost of participating in the program, and were given a list of possible sources including their own resources; family; their school; foundation; PEMDA (local government); loans from a Bank or school cooperative; and other.

Table 1
Costs and Financing by Location: Average, Minimum, and Maximum Reported Rupiah

	Total Costs per year	Direct Costs per year	Indirect Costs per year	Other Costs per year	Identified Financing per year
JAWA BARAT:					
Average	516,077	275,762	140,046	103,699	371,023
Minimum	329,000	217,500	7,000	18,000	125,000
Maximum	1,266,200	415,000	800,000	264,000	870,000
SULAWESI SELATAN:					
Average	335,537	232,211	74,344	23,312	310,537
Minimum	239,500	227,500	4,200	1,000	225,000
Maximum	426,000	295,000	154,000	100,004	615,000
NTB:					
Average	370,202	232,638	98,679	34,148	310,864
Minimum	236,000	232,000	400	500	200,000
Maximum	737,300	240,000	430,800	80,000	708,500
RURAL:					
Average	436,184	236,980	121,370	72,057	355,505
Minimum	239,500	232,500	4,200	1,700	125,000
Maximum	1,078,800	295,000	588,000	254,800	708,500
URBAN MAMPU:					
Average	410,383	239,889	123,867	46,628	347,011
Minimum	338,500	217,500	62,000	9,000	227,500
Maximum	956,000	415,000	480,000	129,000	615,000
URBAN SEDANG:					
Average	338,956	257,696	78,695	43,892	309,270
Minimum	236,000	232,500	400	500	225,000
Maximum	650,000	294,000	237,000	173,200	765,000
URBAN KURANG MAMPU:					
Average	425,136	257,736	103,848	63,774	324,136
Minimum	240,500	232,000	5,000	1,000	225,000
Maximum	1,266,200	317,000	800,000	264,000	870,000
URBAN TOTAL:					
Average	410,853	254,121	100,352	53,851	323,819
Minimum	236,000	217,500	400	500	225,000
Maximum	1,266,200	415,000	800,000	264,000	870,000

As shown in Table 1, there was a very wide range of reported total costs in each of these categories and in total. However, the reported minima are so low in some cases that they almost certainly involve omission of some categories of actual expenditure. On the other hand, some respondents may have reported some expenditures (e.g., for *konsumsi*, consumables) that are not really attributable to participation in the program but would have taken place anyway. Participants in West Java report spending much more on the program than those in other provinces. Although participants in Bandung are paying fees of Rp 275,000 per year, as opposed to Rp 232,500 elsewhere, average total reported expenditure was 187.7% of the Bandung fees in West Java, as opposed to 144.3% of the lower fees in Sulawesi Selatan and 159.2 in NTB. However, rural participants were also spending a total of 187.6% of the lower fees on average, a result of higher expenditures for indirect costs and other costs than in urban areas.

The questionnaire used was structured in such a way that it was not readily apparent to participants what they had reported as their total expenditure when they responded to the question on how they had financed it. As a result, it is unsurprising that on average participants identified financing a total amount significantly smaller than the amount they reported spending. The identified sources of finance totaled 92.5% of reported total expenditure on average in Sulawesi Selatan, as opposed to 84% in NTB and only 71.9% in West Java. Sources of finance identified and the average amount from each source, with the numbers reporting each source, are summarized in Table 2.

Table 2
Sources of Finance
[per year]

	Self	Family	Yayasan*	Bank	Coop	Other
JAWA BARAT						
Average (Rp)	209,626	209,977	102,343	220,001	222,209	187,029
# Case s	98	44	14	3	43	19
SULAWESI SELATAN						
Average (Rp)	244,860	98,333		160,883	124,500	
# Cases	89	3	0	30	5	0
NTB						
Average (Rp)	181,884	151,875	365,000	197,800	134,342	
# Cases	92	12	0	5	55	7
RURAL						
Average (Rp)	235,423	124,579	137,500	244,100	192,721	207,267
# Cases	84	19	1	10	43	9
URBAN MAMPU						
Average (Rp)	228,366	225,000		170,250	212,344	
# Cases	41	2	0	8	16	0
URBAN SEDANG						
Average (Rp)	193,666	237,500	120,000	113,750	200,324	214,714
# Cases	61	16	5	6	17	7
URBAN KURANG MAMPU						
Average (Rp)	194,808	215,432	86,913	201,857	220,981	112,555
# Cases	93	22	8	14	27	10

**Yayasa* is usually translated as 'foundation.'
[Note: Respondents were asked to identify all sources that contributed, so many who gave any answer reported more than one source]

Nobody reported receiving finance from their school itself or from PEMDA (local government), although since the data were collected at least in West Java the provincial government has reportedly made arrangements for granting some financial assistance to teachers undertaking the *Swadana* program. Most students reported financing themselves in all three provinces, but there are some differences in the pattern of other sources. Family was much more significant in Jawa Barat than elsewhere; this is almost certainly because in Bandung itself there were a significant number of *sukwan* teachers, i.e., volunteer teachers receiving small stipends from BP3, taking the program in the hope that it would help them secure established positions as government teachers. These *sukwan* were invariably young, and most reported their families (parents or, in a few cases, husbands) were providing most of the finance. The other major difference between provinces is that very few teachers, comparatively, were getting loans from cooperatives in Sulawesi Selatan, but far more had loans from banks than in the other provinces. This is believed to be connected with differences in the way cooperatives are organized in Sulawesi Selatan compared to the other two provinces. Perhaps the most significant point to arise from the data in the table is the fact that the vast majority of the teachers in the *Swadana* program had been able to find in excess of Rp 200,000 (more than a month's salary for most of them) from their own resources to pay for the program.

Table 3
Time Devoted to D2 *Swadana* Program
[hours per week]

	Average	SD	Minimum	Maximum	Cases
SAMPLE:					
Jawa Barat	19.27	14.19	5.67	96.53	120
NTB	18.72	10.83	4.27	68.87	105
Sulawesi Selatan	12.62	6.52	2.13	45.53	95
Rural areas	18.58	14.41	3.20	96.53	99
Urban Mampu	15.43	8.73	2.13	45.53	45
Urban Sedang	15.85	7.24	5.67	39.67	74
Urban Kurang Mampu	17.49	12.85	4.27	68.87	104
Whole sample	17.11	11.60	2.13	96.53	320

[Based on an assumed 15 week semester, includes registration, tutorials, time studying outside tutorials, examinations, in all cases including travel time; the maximum is the report of a student in rural Jawa Barat who reported having to spend two nights away from home for each tutorial attended].

The time commitment required by the *Swadana* program is substantial for most teachers. The questionnaire asked separate questions about time, including travel time, required for registration, for attending a tutorial, for exams, and for studying outside tutorials, and also how many tutorials were actually attended. The data have been combined and averaged to a per week amount (on the assumption a semester lasts 15 weeks, including the exams) in Table 3. The responses have a large variance, with a range from a mere 2.13 hours a week up to 96.53 hours per week (a student in rural Jawa Barat who reported having to spend two nights away from home in order to attend a tutorial). The

average for the whole sample is 17.11 hours a week, with a low average of 12.62 in Sulawesi Selatan (which also had the lowest variance and the smallest range and minimum), an average of 18.72 hours in NTB, and 19.27 in Jawa Barat. Clearly the time commitment required for participation in the *Swadana* program is substantial, and for many students very substantial.

Table 4
Percentage of students reporting costs in each category, and average expenditure reported by those reporting, by location (% and Rupiah)

Cost Category	Rural:	Urban: Mampu	Sedang	Kurang Mampu
Direct [per year]:				
Registration	100% 8,631	100% 7,778	97% 8,646	99% 8,689
SPP	100% 126,010	100% 98,889	100% 169,595	100% 165,385
Learning Modules	68% 80,000	89% 80,000	53% 80,000	55% 80,000
Tutorials	70% 68,181	89% 70,000	57% 65,643	74% 54,221
Exams	2% 5,000	11% 21,000	5% 5,000	1% 3,000
Continuous Assessment	0%	2% 2,500	0%	2% 3,000
Indirect [per semester]:				
Registration	81% 7,730	100% 13,114	77% 4,522	82% 15,522
Tutorials	85% 40,395	100% 43,024	74% 34,150	82% 33,374
Learning Modules	68% 15,316	40% 6,389	36% 5,950	33% 6,485
Exams	38% 2,705	58% 4,875	41% 2,840	17% 4,806
Continuous Assessment	0%	4% 4,250	0%	1% 7,000
Other Admin	46% 28,922	18% 7,000	18% 8,827	34% 13,893

Cost Category	Rural:	Urban: Mampu	Sedang	Kurang Mampu
Transport	86% 40,588	98% 36,085	85% 21,979	91% 22,644
Accommodation	4% 14,500	0%	1% 50,000	3% 173,333
Photocopying	96% 13,778	89% 15,356	74% 13,403	87% 11,689
'Konsumsi'	84% 10,374	98% 10,511	84% 10,476	89% 17,737
Other costs [per semester]:				
Practice exams	44% 5,047	60% 3,111	47% 4,943	61% 4,357
UT Jacket	32% 16,703	11% 15,000	43% 15,000	46% 15,000
Notebooks/books	34% 10,038	4% 30,000	19% 6,354	20% 9,160
Study group fees	86% 8,641	87% 8,308	70% 4,558	62% 9,773
Writing materials	81% 10,833	98% 6,273	78% 6,487	92% 6,554
Other	68% 15,004	80% 7,308	51% 11,980	70% 16,938

Table 4 gives some detail on the structure of costs borne by participants, subdivided by socio-economic characteristics of location [the direct costs are on an annual basis; the others on a per semester basis]. Some of the results are slightly surprising. Rural participants paid more for other administration, writing materials, learning modules, their UT jackets, and a much larger proportion of them incurred costs in such categories as notebooks/books, photocopying, learning modules, and other administration. The highest reported expenditures on *konsumsi* are in the kurang mampu districts. Overall, only about one third of participants report actually having bought a UT jacket. Teachers from rich districts spent more on transportation than those from kurang mampu districts, although it was in sedang districts that the fewest participants reported transport costs and transport costs were lowest. The students who reported costs under the 'other' category reported a larger average expenditure in kurang mampu and rural areas than in sedang or, especially, mampu districts. On many categories, the teachers from schools in sedang districts not only reported average costs lower than the teachers from schools in other districts, but also a lower proportion of them reported incurring those categories of expenditure than the proportion reporting them from schools in other districts.

IV. Private Rate of Return Analysis

The data show that only in Bandung do a significant proportion of students in the *Swadana* program admit to having outside earnings [only one student in Ujung Pandang and three in Mataram reported outside earnings; none did in rural areas]. Even in Bandung, the proportion is small (17 out of 95) and the reported impact of enrollment in the program on outside earnings is quite small; the 17 who admitted outside earnings before enrollment claimed average outside earnings of Rp 31,765 a week, whereas the 14 who reported continued outside earnings since enrollment reported average earnings of Rp 20,893. Although it is clear that the time cost of enrollment in the program is substantial [the average time studying per week was 10.11 hours in West Java, 13.4 hours in NTB, and 8.45 hours in Sulawesi Selatan], for the vast majority of students there is no reliable basis for placing a monetary value on that time. On average, those participants who do have outside earnings reduced their time allocation to their outside earnings activities by very much less [1.75 hours per week] than their time commitment to the program. Further, although the majority of students responding to the question do believe that completion of D2 will result in being able to charge a higher fee for private *les* (instruction), only a small minority anticipate being able to earn income from les.

In the circumstances, it seems that the best way to approach analysis of the *Swadana* program from a private cost-benefit point of view is to analyze it solely in terms of identified explicit costs and impact on salary. The justification for this is threefold. First, any other benefits students may receive are both uncertain and, for the majority of the students, both unlikely to be obtained in money and difficult to value in money. Second, students responding to the questionnaires were almost all unwilling or unable to provide information allowing a monetary estimate of the value of their opportunity cost (in fact, only 126 respondents [less than 40%] were willing to try to account for how they would use the time devoted to the program if they were not in the program, they were unable to account for all the time, and a tiny minority suggested they would use any of the time for income generating activities). Third, discussion with the students strongly suggested that to the extent they did view enrollment in the program as an investment, they viewed the costs as the explicit ones and the benefits as improved salaries and the improvement in their knowledge base for their teaching careers.

The impact of completion of the program on salary levels is of necessity somewhat uncertain. Salaries of government teachers (*guru*) in Indonesia are determined by *Golongan* (classification), Ruang (*scale*), and step on the scale. The process of determining rank (*Golongan/Ruang*) for primary school teachers has recently been changed, from one which emphasized length of tenure only (and for many approximated to automatic promotion after a certain number of years, up to a ceiling), to one based on functional credit points, equivalent to that used for senior secondary school teachers and University academic staff. In principle, there is now no limit to the rank that a primary school teacher can achieve, so long as she or he accumulates the appropriate number of credit points for the promotion in question. Completion of the D2 program will impact salary via the points earned for participation in it (2 points per year, based on the number of hours spent in tutorials, which count as inservice training) and for award of the diploma (25 points). Thus a teacher can expect to earn 31 points by successful completion of the program that would otherwise not have been earned. This should accelerate promotion to higher rank, and thus generate a higher salary.

However, to project the expected salary streams over a teacher's working life, with and without participation in the program, requires making assumptions about (1) initial rank, (2) initial accumulation of credit points, and (3) rate at which points will be accumulated in the future other than by participation in the program. There are two difficulties. First, the system is new so there is no experience with it on which to base assumptions of rate of earning of credit points (in one field site for data collection, the participants reported that they had not yet been "inpassed," i.e., given their initial

allocation of points)[1]. Second, it is possible that acquiring the D2 diploma may mean that the participants will be in a position to earn credit points, after getting the diploma, at a faster rate than colleagues without the diploma (if, for example, Kepala Sekolah allocate them greater responsibilities). In other words, it is possible that there will be a kind of continuing multiplier effect from possession of the D2, by which by virtue of its possession it is possible for a teacher to accumulate credit points at a faster rate than an SPG graduate for the rest of the teacher's career. However, as yet there is no way to know if this will happen, and no basis for an assumption of the rate at which it might happen.

Accordingly, for the purpose of projecting salaries, it has been assumed that the rate of accumulation of credit points from activities other than participation in the D2 program, both during and after the completion of the D2 program, will be the same for both participants and nonparticipants, and will be sufficient to permit promotion after five years in *Golongan* II and the early portion of *Golongan* III (i.e., 4 points a year in *Golongan* II, 10 in *Golongan* III). The actual projections were done by means of worksheets showing credit points accumulated, hence *Golongan/Ruang/Masa* (class/scale/step), and hence salary; an example is in appendix B. During enrollment in the program salaries are identical, and salary benefits from having been in the program usually begin one year after completion (because promotion occurs one year after the requisite number of credit points are accumulated; another important rule of the system that limits benefits at lower ranks is that there must be at least two years between promotions) The justification for this assumption concerning the rate of accumulation of credit points is that the regulations for the functional credit system state that if promotion is not achieved at the end of six years, a teacher may be separated from the teaching force and assigned to clerical work with attendant loss of functional allowance. If the assumption is in error and in practice holders of the D2 diploma are able to earn credit points at a more rapid rate than those who have not acquired it, their salary advantage will be greater than here assumed and the internal rate of return to participation in the program will be higher.

Internal rates of return have been calculated on the basis of identified explicit costs and salary increment benefits only, on the assumptions of drop out of 7% in the first year, 3% in the second year, and 1% in the third year, and a failure rate of 3% per course, the only explicit cost of a retake being a Rp. 2,500 examination fee[2]. The calculations have been performed for representative 25 year old, 30 year old, 35 year old, and 40 year old, teachers, over a 25 year time horizon (20 years for the 40 year olds, because retirement occurs at 60 and at 60 the two representative teachers will have the same salaries and therefore the same pensions). All are assumed to receive family allowances, for a spouse and three children (except the 25 year olds who are assumed to have only two children). The calculations have been performed for various levels of annual explicit cost, based on the data gathered from the field. By definition, the internal rate of return is the discount rate at which the stream of costs and benefits sums to a present value of zero, i.e., it is equivalent to the interest rate which exactly

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1 Since the calculations reported herein were performed, it has been established that some of the assumptions made about initial accumulations of credit points (inpassing) were not quite accurate in terms of the regulations. No adjustments have been made in this report on the Swadana program, although the calculations made for the comparative study of the various delivery systems are based on the official inpassing formulae. Indications are that the slight differences in question do not seriously affect the estimates of rates of return.

2 In practice, there is an additional Rp. 3,000 fee for the registration form; because this is paid only once by each student regardless of how many retakes the student is taking, this has been omitted from the calculations because no information was available on the distribution of number of retakes per student or how many students had to retake, as opposed to the number of courses retaken. The sum involved is sufficiently small compared to total costs that its impact on the rates of return calculated will be insignificant.

equates the present values of the cost stream and the benefit stream, taking account of the time value of resources by means of that interest rate. The internal rate of return can thus be thought of as the interest rate the teacher 'earns' (by means of higher salary) on the resources he invests in the program (by bearing its costs). This study assumes that government will maintain the real value of teachers' salaries by means of periodic adjustments to salary levels, and therefore totally ignores inflation, making all calculations at 1992 price levels. The rate of return estimates are thus in real terms, and an estimate of the inflation rate (currently about 9% per annum in Indonesia) should be added to these estimates before comparisons with nominal (money) interest rates are made.

Table 5
Internal Rate of Return by Age at Entry to Program, and Characteristics of Place of School, Using Average Age- and Place-specific Total Costs (explicit costs and salary benefits only)

Age at entry:	**25**	**30**	**35**	**40**
Place				
Rural	3.12	5.20	6.83	-4.69
Urban:				
Mampu	3.88	5.27	6.90	-3.57
Sedang	4.64	6.43	8.29	-3.67
Kurang Mampu	3.47	5.00	6.59	-3.12

Note: Rates of return in this table are calculated on the basis of average costs in each of the type of place *for teachers of the relevant age range;* they therefore differ somewhat from the estimates in the corresponding table in the Bahasa Indonesia report, which were based on average costs for each place, using the same place-specific average for teachers of all ages. Teachers of differing ages did tend to have somewhat different costs.

Table 5 presents the estimated private internal rates of return (in per cent per annum[p.a.]) to participation in the program, by place of school and age at entry of the teacher, using age- and place-specific average total explicit cost estimates as reported by participants. There is a clear pattern by age, which is present in all the estimates. The program is most attractive for 35 year olds (rate of return ranging from 6.59% p.a. in *Kurang Mampu* urban districts to 8.29% p.a. in *Sedang* urban districts), then next for 30 year olds (5.00% p.a. to 6.43% p.a.), next for 25 year olds (3.129 p.a. in rural areas to 4.6496 p.a. in *Sedang* urban areas), and turns out to be almost invariably a bad investment for 40 year olds (negative annual internal rates of return from -3.12% p.a. to -4.69% p.a.). This result is a consequence of the structure of government salaries and the assumed workings of promotion via the functional credit system; because the 40 year olds are already quite advanced on the scale, and in the upper reaches of *Golongan* III 100 additional credits are needed for a promotion (as opposed to only 20 in *Golongan* II and 50 in the early parts of *Golongan* III), there are only comparatively few years in which completion of D2 gives the teacher already 40 years old when he starts a salary advantage over the teacher who does not participate in the program [much of the time they are both at the maximum of the same salary scale]. 35 year olds do much better; those younger do less well because in the early years after completion of D2 (which have a stronger impact on the internal rate of return) the salary

increments of rank advantage are less because the teachers' ranks are lower (the salary increment associated with rank advantage increases as rank becomes more senior)[3]

All calculations have taken place in 1992 rupiah, i.e., with early 1992 cost data and salary schedules. These internal rates of return should thus be interpreted as real rates of return, and should be compared to money rates of return less inflation. Long term projections of real interest rates are highly uncertain, but in a low income economy such as Indonesia it is unlikely that they will be below 5% for an extended period of time; a reasonable estimate of the short term real interest rate in early 1992 is probably about 9%. The test discount rate used by the World Bank for project appraisal is normally 10% in real terms. This strongly suggests that at average actual explicit costs and projected salary advantage from acquiring D2, the *Swadana* program is definitely economically unattractive for 40 year old teachers, and of dubious value as an investment for 25 year olds, on this basis. For those in the 30 to 35 year range, the program looks acceptable, on this basis. It should be noted that the returns are lower in rural areas, and in both well-off (mampu) and poor (kurang mampu) urban districts, compared to middle-class urban districts (sedang), because of cost variations (see section III above). In rural districts this is largely a function of higher costs for many items; in the case of the well-off urban districts it appears to be that participants have larger expenditures on the more discretionary cost elements, including out of pocket travel costs, probably reflecting their (or their families') ability to pay. Most tutorials were actually located in sedang districts of urban areas, making transport costs lowest for those participants; in fact, both total indirect costs and total other costs were lowest for the sedang districts. Table 4 shows that this is because lower proportions of participants reported expenditure in many categories as well as because average expenditures of those spending on given items were lower. In the poor districts it seems that expenditure was on the high side on some items (e.g. Konsumsi), and high proportions of participants reported expenditures on some items.

Table 6 gives more detail on the range of rate of return estimates by age, using average, minimum, and maximum reported explicit costs by field site and location of school. As noted earlier, there was a very wide range of reported total costs in several field sites, and this is reflected in these estimates. The pattern by age is the same as in Table 5, but this table shows that luck of location (giving low transport costs) and/or frugality with respect to the discretionary portions of cost have a large impact on the attractiveness of the program. In Bandung, reported costs were higher than in the other centers, and the maximum costs reported were very much higher – high enough to make the real rate of return negative at all age levels. On the other hand, except in Bandung and urban mampu (heavily influenced by Bandung), at the minimum reported cost levels the *Swadana* program, on this basis, looks like a very attractive investment, with prospective real rates of return over 9%, at all ages except 40. Unfortunately, not too much confidence should be placed in the estimates for minimum reported costs, because it is quite likely that they reflect either omitted costs or special situations (proximity to the site of tutorials) that should be unreproducible for the majority of teachers.

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3 The effect of the rule that there must be two years between promotions also reduces the benefits to younger teachers starting off in II/b, because completion of D2 typically provides enough points to justify two promotions, but the second one is delayed two years.

Table 6
Internal Rate of Return by Age at Entry to Program, and Characteristics of Place of School, Using Average, Minimum, and Maximum Explicit Costs of Program by Place of Program (salary benefits only--% per annum)

Age at entry	25	30	35	40
Overall:				
Average costs	4.41	5.10	6.70	-4.26
Minimum costs	9.50	10.25	13.03	3.64
Maximum costs	-3.41	-2.90	-2.33	-16.35
Jawa Barat:				
Average costs	2.77	3.42	4.73	-6.81
Minimum costs	6.40	7.12	9.13	-1.18
Maximum costs	-3.41	-2.90	-2.33	-16.35
NTB:				
Average costs	5.79	6.50	8.38	-2.13
Minimum costs	9.50	10.25	13.03	3.64
Maximum costs	0.18	0.77	1.71	-10.81
Sulawesi Selatan				
Average costs	6.50	7.22	9.25	-1.02
Minimum costs	9.50	10.25	13.03	3.64
Maximum costs	4.27	4.96	6.54	-4.47
Rural:				
Average costs	4.08	4.77	6.31	-4.76
Minimum costs	9.22	9.97	12.67	3.21
Maximum costs	-2.39	-1.86	-1.20	-14.77
Urban overall:				
Average costs	4.56	5.25	6.89	-4.03
Minimum costs	9.36	10.11	12.85	3.42
Maximum costs	-3.41	-2.90	-2.33	-16.35
Urban Mampu:				
Average costs	4.57	5.26	6.90	-4.01
Minimum costs	6.16	6.88	8.83	-1.55
Maximum costs	-1.59	-1.04	-0.31	-13.55
Urban Sedang:				
Average costs	5.00	5.71	7.42	-3.34
Minimum costs	9.36	10.11	12.85	3.42
Maximum costs	1.08	1.69	2.75	-9.43
Urban Kurang Mampu:				
Average costs	4.29	4.98	6.56	-4.45
Minimum costs	9.18	9.93	12.63	3.15
Maximum costs	-3.41	-2.90	-2.33	-16.35

Attention should therefore best focus on the average cost level calculations. These show the *Swadana* program, on this basis, to be economically unattractive at all ages in West Java, and at all ages except 35 in rural areas, but to be an acceptable investment at all ages except 40 in NTB and

Sulawesi Selatan. It might be thought that the reason for this is the higher administrative fee in Bandung, but this is not the whole of the story. It is not only the administrative fee that is higher in Bandung; the other two large categories of cost were also substantially higher in West Java than in the other centers. Total indirect costs (transportation, accommodation, photocopying, consumables) in West Java averaged Rp 70,023 per semester, compared to Rp 49,339 in NTB and Rp 37,172 in Sulawesi Selatan, and total other costs (UT jacket, practice exams, writing materials, study group dues, books, etc.) in West Java averaged Rp 51,849 per semester, compared to Rp 17,074 in NTB and Rp 11,656 in Sulawesi Selatan.

V. Conclusions and Recommendations

On the assumptions made, and average reported cost levels, if a 5% real rate of return is taken as the cut off, the D2 *Swadana* program is a very bad investment for teachers 40 years of age or older, a bad investment for teachers in West Java (Bandung), but a reasonable investment for younger teachers in NTB and Sulawesi Selatan, except for rural teachers of only 25 years of age (or presumably younger). It is also a better investment for urban teachers than for rural teachers, because total costs of participation are higher in rural areas. On our assumptions about the workings of the functional credit scheme, the *Swadana* program is substantially more attractive for 35 year old teachers than for 30 year olds, and for 30 year olds than for 25 year olds. This seems a little old, but is a function of the salary and rank structure and the assumptions made. Initially, it may be advantageous in ways to attract into the program teachers in their middle thirties, since they are already more senior in their schools. However, from a broader point of view it would seem more important to persuade younger teachers to participate, because they have more of their working lives ahead of them. To the extent that possession of the D2 will in fact make them better teachers and thereby improve the quality of primary schooling, the community will benefit for a longer period of time if younger teachers take the program rather than older ones. Younger teachers could be encouraged to enroll in the *Swadana* program by reducing the fees selectively on the basis of age or rank, so that the program was cheaper for those who are more junior (and also are less able to pay). For example, if the fees were cut to half the rate paid outside Bandung (i.e., to Rp 116,250 per year) for 25 year olds, and everything else remained unchanged, the estimated real rate of return to participation in the program would rise for 25 year olds to 10.05% p.a. in Sulawesi Selatan, 8.67% p.a. in NTB, and even to 5.69% p.a. in Jawa Barat. This would make participation in the program much more likely for younger teachers. In view of the higher costs rural teachers have to pay for transportation and the like, and the fact that they have less opportunity for outside earnings, there would also seem to be a case for at least a partial subsidy to rural teachers.

More generally, it must be remembered that these estimates of rate of return are based solely on the explicit costs of the program and the anticipated salary benefits, on the assumption that the only impact of acquiring D2 on functional credit accumulation will be the 31 credit points acquired directly from participation in the program. To the extent holding the D2 will permit credits to be accumulated more rapidly, the rate of return will be higher. On the other hand, if account were to be taken of the opportunity cost of the time commitment to the program, the rate of return would be lower. To give a specific example, the highest rate of return estimated on average cost levels was 8.29% p.a. for 35 year old teachers in urban *sedang* schools. If the time cost is valued at only Rp. 282.5 per hour, at average time commitment the internal rate of return to the program is reduced to 5%. If the teacher's time is valued at Rp 1,092.5 per hour, the internal rate of return to the program is reduced to 0%. The teachers in question (teachers aged in their 30s teaching in schools in *sedang* districts) had average salaries of Rp 123,578 per month. If teachers work about 130 hours a month, this means government values their time on average at about Rp 950 an hour. The thirteen teachers who provided enough information to allow an estimate of their hourly rate of earnings from outside activity reported earnings of Rp 2,146

an hour. It follows that even highly conservative valuations of teachers' opportunity cost of time, e.g. Rp 300 an hour, less than a third of what government pays them, would reduce the private internal rate of return to less than 5% for all groups of teachers considered. In these circumstances, it seems reasonable to conclude that as presently structured, the *Swadana* program is a poor investment from a private point of view for all teachers, except those few who are exceptionally fortunately situated and have extraordinarily low costs other than registration etc. In these circumstances, some subsidy to all teachers in D2 programs would seem likely to be necessary if the upgrading is to be completed in a reasonable period of time without compelling teachers to participate at a cost to themselves.

Table 7
Illustrative Internal Rates of Return Produced by Policy/Assumption Changes

(1) Subsidy of half the non-Bandung registration fee (Rp 116,250 per year), but no allowance for cost of time.

Age	Rural	Mampu	Sedang	Kurang Mampu
25	5.24	6.33	7.46	5.74
30	8.00	8.10	9.92	7.70
35	10.21	10.33	12.61	9.84
40	-0.71	0.99	0.83	1.70

(2) subsidy of half the non-Bandung registration fee (Rp 116,250 per year), and participants' average time cost valued at Rp 300 per hour.

Age	Rural	Mampu	Sedang	Kurang Mampu
25	2.37	3.49	4.13	2.83
30	4.26	4.82	5.82	4.25
35	5.71	6.38	7.56	5.70
40	-6.04	-4.28	-4.48	-4.41

[Calculated at age- and location- specific average total costs and time commitments]

Table 7 (1) shows the consequences of applying a subsidy of half the non-Bandung fee per student, by age and socioeconomic characteristics of location, ignoring the costs of the participants' time. As implied above, on this basis the effect of the subsidy is to make the program an attractive private investment at a 5% discount rate for teachers younger than 40 in all areas. However, the program is still not a good investment for the 40 year olds. Further, if, as in table 7 (2) we cost the participants' time at a mere Rp 300 per hour, and still give the Rp 116,250 per annum per student subsidy, viewed as a private investment the program remains attractive (using a 5% per annum cutoff) only for 35 year old teachers and 30 year old teachers in urban sedang districts. It unfortunately remains unclear what monetary value teachers put on their time, but this result suggests that it would not be surprising if even a 50% subsidy was insufficient to maintain enrollments in the *Swadana* program, given that if they value their time as low as Rp 300 per hour the *Swadana* program is a bad private investment for most teachers.